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Article refers to selected studies of diversity in student's academic aptitude and achievement, showing that institutions of higher education differ greatly in the ability of their student bodies. Also points out that evidence is accumulating that colleges and universities are differentially selective or attractive not only with respect to academic aptitude and achievement of students but also with respect to their social and cultural background and significant aspects of personality. Stresses implications for admission officers.

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The Coming Crises in the Selection of Students for College Entrance
National Education Association
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# Differential Selectivity of American Higher Education

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That institutions of higher education in the United States differ enormously in the ability of their student bodies has long been known. I shall make no effort here to summarize the studies of diversity that have been made over the years; I shall be content with mentioning two or three of the landmarks. The pioneering study of diversity in students' academic aptitude and achievement among the colleges and universities of a single state was, of course, Learned and Wood's *The Student and His Knowledge*.[1] Traxler estimated the range in mean IQ's of freshmen among 323 colleges in the norm group of 1937 for the American Council on Education Psychological Examination, and came to the conclusion that if any high school graduate looked long enough, he would find some college that would accept him.[2] More recently, Wolfle gave the distribution of average scholastic aptitude scores among 41 unidentified colleges.[3]

Early in its studies of diversity, the Center for the Study of Higher Education attempted to determine the selectivity, at point of intake, of American higher education as a whole, the relative selectivity of certain types of groups of institutions, and the variation among the institutions in any one of these categories. To this end, the Center obtained the aptitude test scores of entering freshmen in a stratified random sample of the 1850-some post-high-school institutions in the country. Most of the data were for classes which entered in the fall of 1952; where scores were not available for that year, those of other years were substituted. The sample of 200 institutions was stratified by: (1) geographic region (Northwest, South, North Central, and West); (2) level of programs or degrees offered (associate degrees, baccalaureate degrees, baccalaureate and first graduate or first professional degrees, and advanced professional and doctoral degrees); and (3) form of control (public, private, Protestant, and Roman Catholic).[4]

As background, we may first note the general selectivity of higher education as a whole. Approximately 73 per cent of the 60,000 freshmen in the sample came from the upper half of high school graduates in ability, and the remaining 27 per cent from the bottom half. A much higher level of selection obtained for the college-age groups as a whole. The Center's estimate is that about 84 per cent of college entrants in 1952 were from the upper half of the general population in ability.[5]

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[1] W. S. Learned and B. D. Wood. *The Student and His Knowledge*. New York, The Carnegie Foundation for the Advancement of Teaching, 1938.

[2] A. E. Traxler. "What is a Satisfactory IQ for Admission to College?" *School and Society* 51: 462-464, 1940.

[3] Dael Wolfle. *American's Resources of Specialized Talent*. New York, Harper, 1954.

[4] J. G. Darley, *et al*. Unpublished manuscript, Center for the Study of Higher Education, University of California, Berkeley.

[5] The Center used 1952 as the base year because it was making studies of the survival of students who entered college at that time. The colleges in the sample were asked later to submit data on changes in mean scores between 1952 and 1956. There was no evidence that material changes in selectivity occurred during that period.

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The mean score of all students in the national sample was approximately 104. (The standard deviation was 27.) The lowest institution had a mean of 38, and the highest, 142. There were five negro institutions in the sample; with them eliminated, the range of means was from 75 to 142. Traxler estimated that the range in average IQ among the 323 colleges in the ACE norm group of 1937 was from 94 to 123,[6] but Fricke concluded that the range for all institutions in the country was considerably greater. The Center's data indicate that there was actually a range of about four standard deviations in the mean scores of its national sample of institutions.

The mean scores of the institutions when classified by *form of control* were as follows: public, 101; Protestant, 103; Roman Catholic, 112; and private, 113.

There was a progression in means when the institutions were grouped by level of program offered, to wit: level I, 94; level II, 102; level III, 106; and level IV, 113. The mean of the public universities was 109, and the private ones, 121. If a university is to be, as the dictionary defines it, "an institution of highest grade," its enrollment surely should be limited to students who are capable of high achievement in the arts and sciences, in professional and graduate studies. Yet in the country at large, the complex universities, especially the public ones, were only a little more selective than other types of four-year institutions.

The variation within any one of these groups of institutions, whether they were classified by region, level of program, or control, is more striking than the differences among the groups. The average freshman scores from institution to institution among the Protestant and independent liberal arts colleges, combined, ranged from 90 to 121 in the North central part of the United States. In the South, the range for the same categories combined was from 72 to 123; in this group, in other words, the range of average scores was almost as great as the range within which two-thirds of the individual freshman scores in the country fell.

In one of the states studied somewhat intensively at the Center, only about 16 per cent of the freshmen in the least selective institution had scores above the average score in the most selective institution. Both are separate liberal arts colleges. There was likewise considerable variability in selectivity among both public and private universities. The mean scores of freshmen in the private group in the Northeast section ranged from 109 to 142. The variation among the public universities was from 96 to 121. Broadly similar structurally and in avowed aims, these institutions, whether liberal arts colleges or complex universities, obviously differ enormously in the intellectual demands they can make on their student bodies. The diversity in levels of student ability among institutions that are structurally similar underlines the difficulty of arriving at a meaningful taxonomy of higher education in the United States.

We have come to expect wide differences in student ability among undergraduate colleges, but the variation at advanced levels is perhaps more surprising. One might suppose, for example, that there would be little variation in mean scholastic aptitude among medical schools, which have rather select student bodies compared with college freshmen. Yet the mean equivalent score on the American Council on Education Psychological Examination of seniors in the least selective medical school in 1956 was only slightly above the mean of undergraduate college

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[6] A. E. Traxler. *op. cit.*

entrants in 1952. Sixteen per cent of the entire group of medical seniors had equivalent ACE scores *below* the mean of college freshmen in general.

In speculating on the problem of how students might be appropriately distributed among the diverse institutions in the American scene, one needs to take into account, not only differences in average ability of student bodies, but also the variation in heterogeneity from institution to institution. A few colleges are relatively homogeneous, but most institutions admit students who vary widely in academic aptitude and achievement. Amherst's report on the admission of freshmen in 1959 shows that 80 per cent of the entrants were from the highest quarter of their high school classes, and another 15 per cent were from the second quarter. Nearly 98 per cent of them had scores of 500 or above on the mathematical section of the College Board Scholastic Aptitude Test, and 85 per cent had scores of 600 or above. At the California Institute of Technology, the freshmen of 1957 had mean scholastic aptitude test scores of 649 and 734 on the verbal and mathematical sections respectively. Only a few of the group had scores in the 500-600 range. In total SAT score, the Caltech mean was more than two standard deviations above the average score of college freshmen throughout the country.[7]

Institutions like these are the exceptions. Most colleges and universities are much more heterogeneous. For example, the standard deviations of ACE scores in the most selective and the least selective colleges in one of the states we studied were about the same. In the least selective institution of our national sample, a southern negro college, the standard deviation of scores was approximately equal to that in the most selective institution, which is a private Ivy League university. We found instances in certain colleges in which a student's aptitude test score was a full standard deviation above that of the next highest student in the distribution.

It has been suggested that all institutions should select from a limited range of aptitude; as Wriston put it, "the ideal college should serve a student body drawn from the narrowest possible range in the scale of ability." Would such pairing stimulate better achievement, especially by exceptionally able students? Little evidence is available on this question, but Learned and Wood offered some relevant testimony. They studied the performance in two sets of colleges of students who had done equally well on tests taken as high school seniors. The colleges were divided into "high" and "low" groups on the basis of the average total scores of their seniors on college-level achievement examinations.

The seniors were divided into tenths on the basis of their high school scores, and their performance on the college tests was compared, tenth by tenth, in the two sets of institutions. Not only did the students in the first and second tenths make higher average scores in the "high' 'colleges than in the "low" ones, but all ten groups made higher scores in the more selective set of institutions. Learned and Wood concluded, in part:

> "In the B group [the low colleges] . . . the center of intellectual gravity is low; the median pupil came from the fourth tenth of high school graduates. Students from the upper strata of ability are few, and have corre-

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[7] P. A. Heist and P. A. Williams, "Variation in Achievement Within a Select and Homogeneous Student Body," Unpublished paper, Center for the Study of Higher Education, University of California, Berkeley.

> spondingly less influence on the tone of the institution; they receive less stimulation from their colleagues and teachers, and since with their ability it is easy for them to maintain their honors, they tend to do less work. . . . The leaders and pace-setters from these two top tenths . . . dominate the institutions; being relatively numerous, they find rivalry and stimulus among their peers, they are compelled to fight for honors, and by their good example, they pass the energy with which they are charged down the line."[8]

Perhaps the moral is not to segregate students among institutions by ability, but to be sure that there are enough able students in each mix to stimulate one another and those of lesser ability. We need to know much more about the optimum pairing of students and institutions so far as ability is concerned.

Evidence is also accumulating from a variety of sources that colleges and universities are differentially selective or attractive, not only with respect to academic aptitude and achievement, but also with regard to social and cultural background and significant aspects of personality—intellectual bents and dispositions, attitudes, and values. Only a few examples of these differences can be given here.

In Minnesota, the state colleges and the junior colleges are attended predominantly by students whose fathers are in "low-status" occupations. Darley's study showed, for example, that only 27 per cent of the men and 21 per cent of the women in the state colleges had fathers in managerial or higher positions on the occupational scale. In the private, non-Catholic coeducational liberal arts colleges, on the other hand, 54 and 56 per cent of the men and women, respectively, had fathers in the "high-status" category.[9] The variation in attitudes, beliefs, values, motivations, interest in and familiarity with ideas, and knowledge of the greater society that is associated with differences in social status creates, in turn, profound differences in the climates of educational institutions. And, as Trow has pointed out, "colleges face very different problems in the education of youngsters who already possess some measure of these attitudes and information before they come to college, as compared with those who do not."[10]

Still another important implication of differential selectivity on economic and cultural grounds has been pointed out by Darley, who said that "our manpower needs in society are such that we cannot safely maintain an educational system which is built on a two-way break [between lower and upper socio-economic levels] if, as we have reason to suspect, the good student in the poor institution therefore fails to attain his optimal development, or if the poor student in the good institution fails in tasks not coordinate with his potentials."[11] The appropriate utilization of manpower and the optimum realization of individual potentialities would seem to require that attendance at a particular institution or type of institution should not depend on the accidents of economic resources or geographic proximity.

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[8] W. S. Learned and B. D. Wood. *op. cit.* p. 216.

[9] J. G. Darley. *op. cit.*

[10] M. Trow. "Cultural Sophistication and Higher Education." Paper presented at a conference on "Selection and Differential Treatment in Higher Education." Center for the Study of Higher Education, University of California, Berkeley, 1959.

[11] J. G. Darley. *op. cit.*

In a study conducted at Cornell University, students in several colleges and universities were asked to choose from a list of possible educational goals those they thought the ideal institution should emphasize. The responses varied from institution to institution. For example, students at Wesleyan, Yale, Harvard, and Dartmouth were most likely to check "basic general education and appreciation of ideas" and least likely to stress vocational training. On the other hand, men at the state universities included in the study checked vocational preparation much more frequently than those at the Ivy League colleges.[12] In referring to these data I do not mean to suggest that the state universities should cater to their more vocationally-minded students by giving them vocational training and little else. I do mean to imply that faculties who want to interest students in ideas will have a completely different problem at the two groups of institutions.

Let me turn now to differential selectivity and attraction with respect to intellectual bents or dispositions. Dr. John Holland of the National Merit Scholarship Corporation has reported that students who win NMSC scholarships or certificates of merit tend to enter institutions that have been highly productive in the sense that a large proportion of their graduates have become scientists and scholars. The Center for the Study of Higher Education has tested the hypothesis that the highly productive institutions also tend to attract students with higher scores on certain measures of personality and intellectual disposition. In this case, two groups of NMSC scholarship or certificate holders with equal average scholastic aptitude test scores were studied, one of which had attended highly productive and the other, less productive colleges. Those who attended the more productive institutions could be described as more flexible, more complex in their perception of the environment, more tolerant of ambiguity, more intrinsically interested in learning, and potentially more creative.[13]

The Center for the Study of Higher Education has shown that on a test of Thinking Introversion designed to measure liking for reflective thought and interest in ideas as ideas rather than in their practical outcomes, NMSC students who attended public universities had lower scores than those who went to liberal arts colleges, Ivy League universities, and other private institutions. The Center matched 40 NMSC men who attended Catholic institutions with 40 who entered public, Protestant, and private institutions, on scholastic aptitude and field of specialization. Those who attended the Catholic institutions were significantly higher (at the one per cent level) on authoritarianism, and significantly lower on tests of Originality and Complexity of Outlook than those who entered the other institutions. They were significantly lower (at the five per cent level) on the test of Thinking Introversion.

The Center has compared freshmen at the California Institute of Technology with a sample of high ability male freshmen at the University of California, most of whom were planning to major in the physical sciences. The Caltech freshmen had significantly higher scores on tests of Thinking Introversion, Complexity of

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[12] From papers presented by Norman Miller and Rose K. Goldsen at the Fifty-fourth Annual Meeting of the American Sociological Association, Chicago, Illinois, September, 1959.

[13] T. R. McConnell and P. A. Heist. "Do Students Make the College?" *College and University*, Summer 1959, pp. 442-452.

Outlook, Originality, Social Maturity, Dominance and Confidence, and Responsibility, while the University of California group was higher on Authoritarianism.[14]

Medical schools are also differentially attractive or selective with respect to certain personality characteristics. Dr. Helen Gee has been able to differentiate clusters of similar schools on the basis of a rather large number of student characteristics.[15] More simply, it has been shown that medical schools can be grouped in terms of the scores of their seniors on certain tests of the Allport-Vernon-Lindzey Study of Values. For example, three schools had seniors who possessed in common relatively high theoretical scores and relatively high aesthetic scores, both values considerably above the mean of college students in general, and aesthetic scores considerably higher than those of seniors in the other medical schools. A second cluster had seniors who had in common relatively high theoretical scores but aesthetic scores that approximated the average of college students in general. Still a third cluster was composed of schools in which the seniors still had somewhat elevated theoretical scores but whose aesthetic scores were well below the average of college students at large.[16] Other studies have shown that the combination of high theoretical and aesthetic scores tends to characterize persons with strong intellectual interests and creative dispositions. It is not surprising that the three schools whose seniors possessed this fortunate combination of traits produce a large number of teachers and researchers in medicine.

Student bodies which are approximately equal in measured academic aptitude may vary considerably in some of the characteristics discussed above. Take, for example, two of the most selective and distinguished liberal arts colleges in the country. On Thinking Introversion, Complexity, Originality, Theoretical and Aesthetic Values and Social Maturity the mean scores of the freshmen of 1958 in one of these two colleges were substantially higher than in the other. On all of the measures except Social Maturity the differences were statistically significant at the five per cent or one per cent level.[17] The elevations in one of the colleges were so high in comparison with college students in general that one can think of a large part of the student body as possessing the intellectual capacity, the creative potential, the receptivity to new ideas, the freedom from rigidity, the intellectual flexibility and independence that characterize the inventive scholar.

It should be noted that most of the differences in personal characteristics referred to above, although statistically significant, were not large absolutely. Other examples could have been given, however, of very considerable differences among institutions of almost any type.

It is clear from extensive data which have only been briefly summarized here that students who are quite homogeneous in one characteristic, scholastic aptitude

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[14] P. A. Heist and P. A. Williams. *op. cit.*

[15] Helen Gee. "Differential Characteristics of Student Bodies: Implications for the Study of Medical Education." Paper read at a conference on Selection and Differential Treatment in Higher Education, Center for the Study of Higher Education, University of California, Berkeley, May 1959.

[16] T. R. McConnell and P. A. Heist. *op. cit.*

[17] P. A. Heist and H. Webster. "Differential Characteristics of Student Bodies: Implications for Selection and Study of Undergraduates." Paper read at a conference on Selection and Differential Treatment in Higher Education, Center for the Study of Higher Education, University of California, Berkeley, May, 1959.

for example, may be relatively heterogeneous in other regards. Thus it is conceivably possible for a few institutions, at least, to select both for ability and for other qualities that vary independently of scholastic aptitude or have only a low correlation with it. It is possible, for instance, to identify students of equal measured general scholastic aptitude some of whom are theoretically inclined and others of whom have applied dispositions.[18] The economy needs both kinds. One college may choose to search for students who have strong theoretical interests, and, perhaps, for those who potentially have high creative talent. Another college may feel that it should attract students who are disposed toward practical studies and pursuits, such as certain fields of engineering, business administration, or social service. A third institution may wish a mixture of such qualities in a student body either relatively homogeneous or relatively heterogeneous in academic aptitude.

Data which cannot be summarized here also lead one to ask how many students with certain kinds of talent may be lost to an institution which chooses its students from a very narrow range of scholastic aptitude or conventional academic achievement.[19]

Another question which admission officers should ask is whether it may be more worthwhile to select or accept students for their potentialities than to recruit those who at entrance already possess desirable interests, attitudes, values, and dispositions in generous degree. There may be more challenge in stimulating serious intellectual interests than in attracting students who have already developed them. (But the answer to the question must rest in part on the extent to which change in desirable directions can be made under appropriate conditions during the college years.)

In closing I should state that although I have emphasized differences among institutions, there are in most colleges and universities large internal differences in the characteristics that have been under study. A few medical schools, mainly those privately controlled, may be able to attract large concentrations of students with theoretical and scholarly interests. But all medical schools are likely to have at least a few students with these characteristics. The problem of most institutions is to identify students with special aptitudes and varied bents, dispositions, styles, or potentialities and to differentiate their educational experience in accordance with their individual qualities.

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[18] M. P. Weissman. *An Approach to Assessment of Intellectual Disposition Among Selected High Ability Students.* Ph.D. dissertation, University of California, Berkeley, 1959.

[19] P. A. Heist and P. A. Williams. *op. cit.*